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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,447	09/11/2003	Stephen L. Martin	B0630.70034US00	4905
23628	7590	02/24/2005	EXAMINER	
WOLF GREENFIELD & SACKS, PC				MEI, XU
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600 ATLANTIC AVENUE				PAPER NUMBER
BOSTON, MA 02210-2211				2644

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/660,447	MARTIN ET AL.
	Examiner Xu Mei	Art Unit 2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 11 September 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-7,9-16,18-33,35-37,39-54 and 56 is/are rejected.
- 7) Claim(s) 8,17,34,38 and 55 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>20040206</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

DETAILED ACTION***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 9-11, 13, 41-42, 44, 47, 7, 24-25, 29-31, 33, 43, 48, 6, 27, 46 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Hori et al (US-5,550,925, hereafter, Hori).

Regarding claims 1-4, 9-11, 13, 41-42, 44, 47 and 50, Hori discloses the claimed audio signal processor and method (see Fig. 1 for example). BPF 5 is used for separating a low-frequency component (i.e., a low pass filter, col. 6, lines 17-20). The detecting circuit 7 is used to detect the level or amplitude or peak of the signal. The fix cutoff frequency for the variable filter is shown in Fig. 2. The detected input signal level is a non-linear level.

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Regarding claims 7, 24-25, 29-31, 33, 43 and 48, Hori discloses the claimed audio signal processor (see Fig. 8). BPF 5 is used for extracts a low-frequency component from the output signal (i.e., a low pass filter, col. 7, lines 47-57).

For what's called for in claims 6, 27 and 46, see col. 8, lines 23-40 for example.

3. Claim 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Sauvagerd (US-5,974,156).

Regarding claim 56, Sauvagerd discloses the claimed digital audio signal processor as shown in Fig. 1.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 5, 26, 28 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori.

Regarding claims 5, 26, 28 and 45, Hori discloses the audio processor as discussed in claims 4, 24-25 and 44 above. What does Hori not show is the specific parameters of the attacking time and decay time, specific cutoff frequency as claimed. Hori discloses a time constant circuit for setting an attack recovery time (i.e., attacking time and decay time, see col. 6, lines 24-28) and the cutoff frequency for the audio processor as claimed. It would have been obvious to one of ordinary skilled in the art to design or arrange or use specific circuitry components for the time constant circuit of Hori in order to achieve specific desired time attack and decay parameters, and specific cutoff frequency for the variable filter.

6. Claims 22-23 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Waller, Jr. (US-4,696,044, hereafter, Waller).

Regarding claims 22-23 and 39-40, Hori discloses the audio processor as discussed in claims 1 and 24 above. What does Hori not show is the specific circuit connection as claimed for the variable filter. Waller discloses an audio processor including

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a variable control filter (VCF) including specific circuitry components as claimed (see Fig. 2). It would have been obvious to one of ordinary skill in the art to utilize the variable control filter with specific circuitry components as shown by Waller for the variable filter of Hori since both variable filters are basically the same type of variable filter for audio signal processing.

7. Claims 12, 32 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Kimura (US-5,172,358).

Regarding claims 12, 32 and 49, Hori discloses the audio processor as discussed in claims 1, 24 and 41 above. What does Hori not show is the audio processor including bass frequency control to limit the Fletcher-Munson effect. It is old and well known in the audio art to utilize Fletcher-Munson curve as a basic standard for designing and controlling audio processing device to match with human hearing. Kimura discloses a loudness control circuit for an audio device including low or bass frequency boosting according to the Fletcher-Munson curve (see Fig. 1 and 6). It would have been obvious to one of ordinary skill in the art to modify the audio processor of Hori with the old and well known Fletcher-Munson curve as standard guideline

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for control bass audio frequencies to limit the Fletcher-Munson effect as shown by Kimura in order to improve low frequency response of the audio processor.

8. Claims 14-16, 18-21, 35-37 and 51-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori in view of Sauvagerd.

Regarding claims 14-16, 18-21, 35-37 and 51-54, Hori discloses the audio processor as discussed in claims 1, 24 and 41 above. What does Hori not show is the audio processor with the variable filter that comprises digital filter and signals being processes in digital environment as claimed.

Sauvagerd discloses the digital audio signal processor as discussed above. And since digital signal processing is old and well is very well known in the art at the time the invention was made, it would have been obvious to one skilled in the art at the time the invention was made to be motivated to modify the audio processor of Hori by utilize digital signal processing as shown by Sauvagerd, in order to provide more compatible, flexible and durable audio processor in today's digital environment.

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8. Claims 8, 17, 34, 38 and 55 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sanderson, Gebert et al, Mandell, Anderson, Walton et al, Smith, Kikuchi et al, Williamson, III, Hagino et al, Mercs et al, and Uramoto are cited as pertinent art to the invention. The cited references discloses various filtering circuits or devices for audio signal processing.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xu Mei whose telephone number is 703-308-6610. The examiner can normally be reached on Monday-Friday (9:30-6:00), alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more

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information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Xu Mei
Primary Examiner
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